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(54) **DEVELOPER CARTRIDGE HAVING SPACER BETWEEN HOUSING AND LAYER THICKNESS REGULATION BLADE**

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(56) **References Cited**

U.S. PATENT DOCUMENTS

8,712,296 B2 4/2014 Mori
2002/0110383 A1* 8/2002 Kikuchi et al. 399/103

2005/0254862 A1* 11/2005 Toba et al. 399/284
2009/0087217 A1* 4/2009 Norris G03G 21/181
399/109
2009/0142108 A1* 6/2009 Blanck G03G 15/0812
399/284
2011/0158708 A1 6/2011 Mori
2014/0086642 A1* 3/2014 Itabashi G03G 21/1821
399/284
2014/0212183 A1 7/2014 Mori
2014/0270844 A1* 9/2014 Ishio G03G 15/0812
399/109

FOREIGN PATENT DOCUMENTS

JP H11-231646 A 8/1999
JP 2001-331034 A 11/2001
JP 2011-150269 A 8/2011
JP 2012-058592 A 3/2012

* cited by examiner

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(57) **ABSTRACT**

A cartridge include a housing configured to accommodate a developing agent therein, a developing agent carrying member configured to carry the developing agent, a layer thickness restricting member disposed between the housing and the developing agent carrying member and configured to restrict a layer thickness of the developing agent carried by the developing agent carrying member, and a spacer disposed between the housing and the layer thickness restricting member in a first direction in which the developing agent carrying member and the layer thickness restricting member face one another and in which is orthogonal to a longitudinal direction of the developing agent carrying member. The spacer includes a first engaged portion configured to be engaged. The layer thickness restricting member includes a first engaging portion configured to engage with the first engaged portion such that relative movement of the spacer and the layer thickness restricting member is restricted.

17 Claims, 20 Drawing Sheets

